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# FAMILY LEVEL WEANING FOODS

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# I INTRODUCTION

In discussing ways and means to combat protein malnutrition in the pre-school age and to improve the nutritional situation for this age group, reference is often made to the increasing number of cheap high protein products which are produced on a commercial or semi-commercial basis and which are based mainly on locally available raw material (Incaparina, Superamin, Faffa). In recent years there has been a great deal of publicity around such products and seemingly encouraging production figures keep being presented. And certainly they are good and deserve all possible support. They constitute an excellent and cheap alternative to the multitude of usually imported milk formulas and cereal mixes which are too expensive for the majority and which cannot be handled by unsophisticated mothers in a hygienic way to prevent gastro-intestinal infections.

However, even if the production and distribution figures presented for these supplementary foods point upwards, simple calculations will reveal that they are consumed by only a small proportion of children in the needy ages on a regular day-to-day basis.

Although Ethiopia may represent a comparatively "difficult" country from the point of distribution and accessability, the excellent marketing reports of Professor Bo Wickstroem give an indication of the small percentage of potential consumers out of the total potential. In Ethiopia less than 5% of children in ages below 5 could thus for economic and/or geographic reasons be considered potential consumers. There are good reasons to believe that the remaining 95%, living mainly in rural areas, would not be better off nutritionally. The figure for potential consumers in other countries in the region may be slightly better.

Usually additional food is being introduced during the first year of life as a supplement to breast-feeding, or given as the only food in case of failure of lactation. Such additional or weaning foods are very seldom nutritionally adequate in relation to the child's need, are often based on

nutritional misconceptions (e.g. Abish in Ethiopia), may be given by bottle (various decoctions) and most often in insufficient quantities. It is our definite practical experience from the applied nutrition programme in Ijaji in Ethiopia that the mothers are not persuasive enough and that the children consequently do not get sufficient quantities of new additional foods. Decoctions given by bottle are often more used as a temporary comforter in exchange of breast-feeding than proper additional weaning food in the true sense.

The teaching of weaning foods in MCH sessions - if there is given any teaching at all! - are too often based on recipes and conceptions of western standards, food resources and preferences (e.g. "milk pudding" to unsophisticated rural mothers).

It must be realized that a successful weaning food programme has to be based on food stuffs which are available in the house, which are familiar and culturally acceptable and which can be prepared with the available kitchen facilities. The main aim is to introduce a soft, digestible diet, containing adequate protein and calories but also the necessary vitamins and minerals and particularly vitamin A and C and iron. These foods should be taken together with the small but important amount of breast-milk from the mother which should continue during and after the initial weaning process.

## II COMPOSITION OF WEANING FOODS

Jelliffe has coined the terms double, triple and quadruple mixes for such truly indigenous village level weaning foods. They contain in various combinations principally the following ingredients: a staple, legumes, animal protein and dark green leafy vegetables.

A. The staple will provide the main part of the calories. If a cereal grain is available it should be preferred to a tuber or plantain as these are more bulky and high in water and fiber and consequently poor sources even of calories. It may be necessary to add "compact" calories in the form of oil (e.g. palm oil) and/or sugar.

B. Legumes will usually have to provide the bulk of the protein and by mixing the (cereal) protein and the legume protein, a mutual amino-acid supplementation will be achieved with a resulting improved biological value of the protein. This will be further improved by addition of small amounts of animal protein. idely used and cultivated legumes which are suitable are kidney beans (Phaseolus vulgaris), chick peas (Cicer arietinum), peanuts or groundnuts and soybeans. Because of their undoubted poor digestability it is important to see that legumes are well cooked and carefully prepared - skins should be removed by soaking or scalding or after cooking by sieving.

C. Animal protein is almost always in short supply and has to be used in the most advantageous way. All possible efforts in the nutrition education should be made to redistribute it within the family to the weaning age children. The animal protein available for the child should be given throughout the day and intermixed with as many meals as possible.

D. Dark green leafy vegetables represent excellent sources of carotene, vitamin C, the B-complex, iron as well as protein and whose amino acid composition complement that of staple foods.

III PRINCIPLE OF MULTIMIXES

Since ancient times most communities have used by intuition foods in mixtures and it is not until the last few decades that the scientific value of mutual amino acid supplementation to reinforce the biological value of vegetable proteins has been realized.

The best way of planning a nutritious, village level weaning food is a mixture of ingredients designed to complement one another, especially to ensure the intake of the full range of the 8 essential amino acids at the particular meal.

A. Double mixes consist of the local (preferably cereal) staple together with the most suitable legume or animal protein or dark green leafy vegetable.

The staple: Legume double mix can commence with a 4:1 proportion, followed by a gradual increase until a 2:1 mixture is reached.

Examples: 2 parts tef, wheat, barley or maize + 1 part chick peas
1 part rice + 1 part ground nut
1 part rice + 4 parts lentils
1 part semolina + 1 part red lentils
120 g maize flour + 20 g DSM
135 g rice + 50 g spinach

B. Triple mixes, consisting of a double mix cereal-legume with added small amounts of animal protein to reinforce still further the essential amino acids of the vegetable protein, should be given at least occasionally.

Examples: tef + chick peas + cottage cheese
plaintain + ground nut + egg
rice + chick peas + milk

Alternatively triple mixes may be prepared from a mixture of staple, dark green leafy vegetables (or orange-pigment vegetable like mangoes, papaya, pumpkins, avocado) and a small quantity or animal protein or from staple, legume and dark green leafy vegetables.

C. Quadrimixes. If local food resources and cooking practices permit, the triple mixes staple - legume - animal protein can be converted into a quadrimix by adding small quantities of dark green leafy vegetables (or orange-pigment vegetables).

Planning of mixtures should aim at using the largest number of ingredients especially small quantities of animal protein and the quadri- and triple mixes are therefore preferable to the double mixes.

IV PREPARATION

It is essential that the ingredients in these mixtures are prepared in a way so as to make them soft and digestible (soaking and skinning of legumes, mashing to a suitable masticable consistence) and to ensure that essential nutrients are not destroyed to a great extent (e.g. leafy vegetables should be boiled unchopped in short water with lid on to preserve vitamin C).

The difficulties in carrying out such seemingly simple procedures in village kitchens must be appreciated and the instructions for the preparations have to be as simple as possible so as not to discourage the mothers in trying, particularly in view of the fact that special foods of this type for small children are not traditionally prepared.

If special dishes prepared separately for the young child are not culturally or domestically practicable, weaning food mixtures can be prepared from the adult diet by removing suitable (unspiced or not yet spiced) portions and mixing them together to form multimixes.

## V TIME OF INTRODUCTION

In communities where a prolonged and quantitatively satisfactory breast-feeding is practiced, multimixes should be gradually introduced from 6 months of age. It is our experience from Ethiopia that this will meet with difficulties however good nutritional and physiological reasons there may be for introduction at this age. The mothers are unaccustomed to giving food by spoon at that age (hand-feeding should of course be discarded) and are not persuasive enough to try again the next day if or when the child refuses the first serving. However, with regard to the overwhelming evidences of weight lagging from before or around 6 months due to combined nutritional inadequacies and infections, the nutrition education has to stress this point firmly and to motivate the mothers accordingly.

In communities where breast-feeding is failing earlier, multimixes should be gradually introduced already from 4 months.

A great stress should be laid on encouraging the mothers to continue lactation for 1-2 years.

## VI NUTRITION EDUCATION AND DEMONSTRATION

It has been said many times but deserves to be repeated over and over again: "A nutritious food which is not eaten has nil nutritional value". In other words: within the region there are a multitude of a variety of potential family level weaning food recipes, which could suit most food

pattern situations. The question is: how should these be taught, who should teach and how should the evaluation of success or otherwise be done?

The teaching of family level weaning foods should be an integrated part of the general nutrition education and all possible means and channels used.

However, in the field of health and nutrition education there is no topic which requires actual demonstration so badly as the teaching of family level weaning foods. The mother has to see the preparation or participate in it, taste the food herself and feed it to the child - not until then she may feel convinced that this food is within the possibilities of the family budget, her kitchen facilities, the food cultural pattern and acceptability of her child.

Important points are - and too often neglected - that the demonstration should be made in a familiar surrounding (e.g. a hut or similar and not in a fancy hospital demonstration kitchen), preferably not while waiting to see the doctor for her sick child in a busy outpatient department when her attention is difficult to attract; all the equipment used for the preparation must be simple, cheap and of local standard including the fuel used for cooking. This cannot be overemphasized.

The group should be sufficiently small to enable discussions and "feedback" from the audience. If possible a mother, who has attended previously or has had a child recovered from malnutrition on proper food, should next time assist in the demonstration and/or assist in the nutrition conviction.

Careful information must be given about the probability that the child may refuse the first few times, that the stools may change in consistency and smell and that sufficiently large meals have to be given.

Who should teach? In Ethiopia, where the teaching of indigenous family level weaning foods started some years ago the Nutrition Institute (Children's Nutrition Unit) has taken the lead by "teaching the teachers". And the latter are mainly the staff running MCH sessions. Especially the community nurses have a great responsibility that such practical demonstrations and teaching

really be done at such sessions. The expenses involved in purchasing the necessary demonstration equipment are negligeable (in Ethiopia around US$ 4-5) and the ingredients are very cheap. It is the responsibility of the supervisors, however, to see to it that this badly needed activity is maintained on a regular basis and in an efficient, friendly, convincing and inspiring way. And finally - by frequent evaluations of the results in terms of advice followed, and the state of nutrition in the weaning age children - to see to it that necessary adjustments and renewals be made in the teaching.

## VII SUMMARY

In summary it could be said that although commercialized, cheap, high protein weaning foods are making a slow but encouraging progress in terms of sales the majority of weaning age children for many years to come will have to depend on what is available in the house as regards raw material for feeding. Utilizing scientific knowledge of the nutritive values of such ingredients and paying due attention to local traditions and customs it is possible to formulate a great variety of recipes, differentiated as to country, region and province.

The importance of such a programme cannot be overemphasized and great efforts should be made by those responsible for nutrition education to get the message out to the grass-root - mother level.

## REFERENCES

1. Jelliffe, D.B.: Infant nutrition in the subtropics and tropics. WHO Monograph No.29, Geneva 1955.

2. Idem: Child nutrition in developing countries. US Department of Health, Education and Welfare. US Government Printing Office, Washington D.C.

3. Idem: The assessment of the nutritional status of the community. WHO Monograph No.53, 1966.